

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.-10. (Cancelled).

11. (Currently Amended) A method for controlling robot handling control includingcomprising:

a) a first step of detectingdetermining a change in an external force acting upon an object grasped object at an object grasping unit with a grasp force;

a second step of comparing a change value of the external force with a predetermined threshold;

b) a third step of deducing, in a case thatdetermining, when the change in the external force has a change value is equal to or greater than a predetermined the threshold, a factor of the change value of the external force if the change in the external force is due to a first condition which is a delivery of the grasped object or a second condition which is a non-delivery of the grasped object; and

c) a fourth step of outputting a grasp-force releasing relaxing signal for releasing a grasp force or for releasing the grasped object when the change in the external force is due to the first condition and grasping unit or a grasp-force strengthening signal for strengthening the grasp force of on the grasped object grasping unit, according to a deduction result in the third step when the change in the external force is due to the second condition.

12. (Currently Amended) A method for controlling robot handling control according to claim 11, wherein ~~the third step b) includes: deduces as a request for releasing the grasped object in a case the external force has a change value equal to or greater than the predetermined threshold and as a non-deliver of the grasped object in a case of detecting~~

determining that the change in the external force is due to a request for releasing the grasped object when the change in the external force is equal to or greater than the predetermined threshold; and

releasing the grasped object when the change in the external force is determined to be due to the request for releasing the grasped object;

determining, after releasing the grasped object in the releasing step, that the change in the external force is due to 1) the first condition which is the delivery of the grasped object when a dynamic frictional force in a gravity direction caused by a fall-downward movement of the grasped object is not detected or 2) the second condition which is the non-delivery of the grasped object when the dynamic frictional force in the gravity direction caused by the downward movement of the grasped object is detected after releasing the grasped object from the object grasping unit, the fourth step outputting a grasp force releasing signal for releasing a grasp force of the object grasping unit.

13.-17. (Cancelled).

18. (Currently Amended) A method for controlling robot handling control according to claim ~~12~~¹¹, further including:

a step that attention is called to an outside when the grasp-force relaxing signal for releasing the grasped object is outputted, in a case of releasing the grasp force, attention is called to an outside.

19. (Cancelled).
20. (New) Apparatus for controlling robot handling comprising:
 - an object grasping unit for grasping an object with a grasp force;
 - an external force detector for determining a change in an external force acting upon the object grasped with the grasp force;
 - a determining unit for determining, when the change in the external force is equal to or greater than a predetermined threshold, if the change in the external force is due to a first condition which is a delivery of the grasped object or a second condition which is a non-delivery of the grasped object; and
 - a grasp-force controller for outputting a grasp-force relaxing signal for releasing the grasped object when the change in the external force is due to the first condition and a grasp-force strengthening signal for strengthening the grasp force on the grasped object when the change in the external force is due to the second condition.
21. (New) Apparatus according to claim 20, wherein the determining unit:
 - determines that the change in the external force is due to a request for releasing the grasped object when the change in the external force is equal to or greater than the predetermined threshold,
 - releases the grasped object when the change in the external force is determined to be due to the request for releasing the grasped object, and

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determines, after releasing the grasped object, that the change in the external force is due to 1) the first condition which is the delivery of the grasped object when a dynamic frictional force in a gravity direction caused by a downward movement of the grasped object is not detected or 2) the second condition which is the non-delivery of the grasped object when the dynamic frictional force in the gravity direction caused by the downward movement of the grasped object is detected.

22. (New) Apparatus according to claim 20, wherein attention is called to an outside when the grasp-force relaxing signal for releasing the grasped object is outputted.